

## Claims

1. Use of a peptide or a protein selected from Apolipoprotein B; a fragment thereof; Apolipoprotein E and a fragment thereof, in an assay for the detection of the formation of PrP<sup>Sc</sup> in a sample.  
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2. Use of a peptide or a protein selected from Apolipoprotein B; a fragment thereof; Apolipoprotein E and a fragment thereof, in a screening assay for identifying compounds that modulate the conversion of PrP<sup>C</sup> into PrP<sup>Sc</sup>.  
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3. Use according to claims 1 or 2 wherein the peptide or protein is selected from Apolipoprotein B; a fragment thereof; Apolipoprotein E and a fragment thereof, which forms a complex with the LDL receptor.
- 15 4. Use according to any of the preceding claims wherein the assay is a Protein Misfolding Cyclic Amplification (PMCA) assay.
5. Use according to any of the preceding claims wherein the assay is a Protein Misfolding Cyclic Amplification (PMCA) assay using normal brain homogenate as a source of normal PrP<sup>C</sup> and substrate.  
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6. Use according to claims 1 to 4 wherein the assay is a Protein Misfolding Cyclic Amplification (PMCA) assay using lipid rafts from infection sensitive neuroblastoma cell line N2a as a source of normal PrP<sup>C</sup> and substrate.  
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7. Use according to any of the preceding claims wherein the protein is Apolipoprotein B.
8. Use according to any of the preceding claims wherein the protein is Apolipoprotein B, the assay is a Protein Misfolding Cyclic Amplification (PMCA) assay using lipid rafts from infection sensitive neuroblastoma cell line N2a as a source of normal PrP<sup>C</sup> and substrate.  
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- 5 9. Use of a modulator of a protein or a peptide, wherein the protein is selected from from Apolipoprotein B and a fragment thereof, for the preparation of a pharmaceutical composition for the treatment of a prion disease.
- 10 10. Use according to claim 9 wherein the modulator is an antibody raised against Apolipoprotein B or a fragment thereof.
11. Use according to any of the preceding claims wherein the peptide or the protein contains the sequence of SEQ ID NO: 3.
- 15 12. Use according to any of the preceding claims wherein the peptide or the protein is of a molecular weight selected from 30 and 40 kDa and which sequence is selected from fragments of Apolipoprotein B taken between positions 3201-3558, 3548-3905, 3201-3905, 3291-3558, 3548-3815 and 3291-3815.
13. Use according to any one of claims 9 to 12 wherein the prion disease is bovine spongiform encephalopathy (BSE).
- 20 14. Use according to any one of claims 9 to 12 wherein the prion disease is a Creutzfeld-Jacob Disease (CJD).
- 25 15. A method for the diagnosis or detection of a prion disease within a subject suspected of suffering from such a disease which comprises (i) contacting a sample from said subject with a peptide or a protein selected from Apolipoprotein B; a fragment thereof; Apolipoprotein E and a fragment thereof; (ii) contacting the mixture obtained in step (i) with PrP<sup>C</sup> or PrP<sup>C</sup> containing mixtures; and (iii) determining the presence and/or amount of PrP<sup>Sc</sup> in said sample.
- 30 16. A method of determining a marker that predisposes a subject to a prion disease, comprising (i) measuring a level of a protein selected from Apolipoprotein B; a

fragment thereof; in said sample; and (ii) correlating said level of protein obtained in said measuring step with the occurrence of a prion disease.

5 17. A method according to any one of claims 15 to 16 wherein the prion disease is bovine spongiform encephalopathy (BSE).

18. A method according to any one of claims 15 to 16 wherein the prion disease is a Creutzfeld-Jacob disease.

10 19. A method for the detection of PrP<sup>Sc</sup> within a sample, which assay comprises (i) contacting said sample with a peptide or a protein selected from Apolipoprotein B; a fragment thereof; Apolipoprotein E and a fragment thereof; (ii) contacting sample obtained in (i) with PrP<sup>C</sup> or PrP<sup>C</sup> containing mixtures; and (iii) determining the presence and/or amount of PrP<sup>Sc</sup> in said sample.

15 20. A method for identifying, in a sample, a compound which modulates the transition of PrP<sup>C</sup> into PrP<sup>Sc</sup> comprising: (i) contacting said sample with a peptide or a protein selected from Apolipoprotein B; a fragment thereof; Apolipoprotein E and a fragment thereof; (a) in the presence of said modulatory compound and (b) in the absence of said compound; (ii) contacting the mixtures obtained in step (i) a and (i) b with PrP<sup>C</sup> or PrP<sup>C</sup> containing mixtures; and (iii) determining the amount of PrP<sup>Sc</sup> (a) in the presence of said modulatory compound and (b) in the absence of said modulatory compound.

25 21. A method according to any one of claims 15 to 20 wherein the peptide or the protein contains the sequence of SEQ ID NO: 3.

30 22. A method according to any one of claims 15 to 21 wherein the peptide or the protein is of a molecular weight selected from 30 and 40 kDa and which sequence is selected from fragments of Apolipoprotein B taken between positions 3201-3558, 3548-3905, 3201-3905, 3291-3558, 3548-3815 and 3291-3815.

23. An assay for the detection of PrP<sup>Sc</sup> in a sample, which assay comprises (i) contacting said sample with a peptide or a protein selected from Apolipoprotein B; a fragment thereof; Apolipoprotein E and a fragment thereof; (ii) contacting  
5 the mixture obtained in step (i) with PrP<sup>C</sup> or PrP<sup>C</sup> containing mixtures; (iii) determining the presence and/or amount of PrP<sup>Sc</sup> in said sample.
24. A screening assay for identifying a compound which modulates the transition of PrP<sup>C</sup> into PrP<sup>Sc</sup> comprising: (i) contacting said sample with a peptide or a protein  
10 selected from Apolipoprotein B; a fragment thereof; Apolipoprotein E and a fragment thereof; (a) in the presence of said modulatory compound and (b) in the absence of said modulatory compound; (ii) contacting the mixtures obtained in step (i) a and (i) b with PrP<sup>C</sup> or PrP<sup>C</sup> containing mixtures; and (iii) determining the amount of PrP<sup>Sc</sup> (a) in the presence of said compound and (b) in  
15 the absence of said modulatory compound.
25. An assay according to any one of claims 23 to 24 wherein the peptide or the protein contains the sequence of SEQ ID NO: 3.
- 20 26. An assay according to any one of claims 23 to 25 wherein the peptide or the protein is of a molecular weight selected from 30 and 40 kDa and which sequence is selected from fragments of Apolipoprotein B taken between positions 3201-3558, 3548-3905, 3201-3905, 3291-3558, 3548-3815 and 3291-3815.
- 25 27. A diagnostic kit for use in an assay according to claims 23 to 26, comprising a probe for receiving a sample and a peptide or a protein selected from Apolipoprotein B and a fragment thereof.
- 30 28. An apparatus for use in a method according to any one of claims 15 to 22 or an assay according to any one claims 23 to 26.